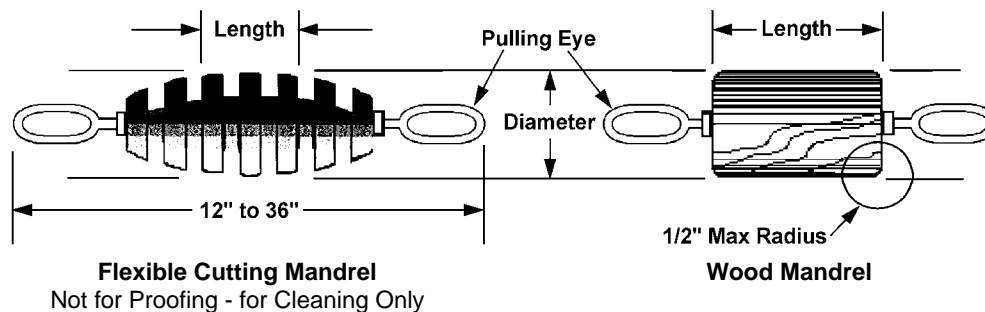


MANDRELING AND CLEANING OF DUCTS AND CONDUITS

1. After the concrete has been poured or the trench backfilled over conduit each and every duct run and conduit shall be tested for obstructions or flattening by pulling a non-flexible wood mandrel of appropriate size through the duct or conduit within 5 days of installation. If an obstruction is found in a duct or conduit, that section shall be replaced.
2. Cleaning ducts shall be performed by drawing a brush with stiff bristles and a swab through each duct and conduit to make certain no foreign materials are left in the duct.
3. Conduit runs of 5 inches or larger shall be flushed with a water jet type system such as the "Jet Rodder" equipment. Completion subject to SCL inspector's approval.
4. Cleaning and mandreling operations may be performed simultaneously.
5. After cleaning and mandreling, each conduit shall have left in it a flat, pre-lubricated, polyester or Aramid pull tape of 2,500 lb. minimum tensile strength (Fibertek Inc. or equal; City Light Stock Nos. 012293 and 012480). The pull tape shall be printed with sequential footage markings. Every conduit not part of a duct bank shall contain a 3-inch wide detectable underground marking tape, red-colored, Reef Industries "Sentry Line" #42-0110 or Pro-Line Safety or equal (City Light Stock No. 736800).
6. After cleaning and mandreling, each conduit shall be plugged with plugs of the type and manufacturer specified in Seattle City Light Material Standard 7345.7.

7. Mandrel Sizes

Conduit Size, in.	Mandrel Diameter, in.	Mandrel Length, in.
3/4	0.62	1.00
1	0.78	1.25
1-1/4	1.00	1.50
1-1/2	1.25	1.75
2	1.62	2.25
2-1/2	2.00	2.75
3	2.50	3.25
3-1/2	3.00	3.75
4	3.50	4.25
5	4.75	5.25
6	5.50	6.25

8. Typical Mandrel Configuration

STANDARDS COORDINATOR

Charles L. Shaffer

STANDARDS SUPERVISOR

John C. Himmer

UNIT DIRECTOR

Hardee J. J.